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On the solvability of the problem of saturated-unsaturated filtration consolidation

Pavlova M., Rung E.
Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

We prove the existence of a solution of the initial-boundary value problem modeling the process of liquid filtration in a viscoelastic medium in the case of semipermeability on part of the boundary. To determine the generalized solution, we use the Kirchhoff transform. We consider the case (most often used in applications) in which the range of the Kirchhoff function is only part of the real line. To prove the existence theorem, we use the method of the semidiscretization with respect to the variable t and the Galerkin method. © 2012 Pleiades Publishing, Ltd.

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